

within the drawings that have the same numbers may be identical elements or may be similar elements, depending on the context.

[0785] Where the term “comprising” is used in the present description and claims, it does not exclude other elements or steps. Where an indefinite or definite article is used when referring to a singular noun, e.g., “a,” “an,” or “the,” this includes a plural of that noun unless something otherwise is specifically stated. Hence, the term “comprising” should not be interpreted as being restricted to the items listed thereafter; it does not exclude other elements or steps, and so the scope of the expression “a device comprising items A and B” should not be limited to devices consisting only of components A and B. This expression signifies that, with respect to the present disclosure, the only relevant components of the device are A and B.

[0786] Furthermore, the terms “first,” “second,” “third,” and the like, whether used in the description or in the claims, are provided for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances (unless clearly disclosed otherwise) and that the embodiments of the disclosure described herein are capable of operation in other sequences and/or arrangements than are described or illustrated herein.

What is claimed is:

1. A valve comprising:
 - a housing configured to surround a tube;
 - a filler disposed within the housing, the filler having at least two differing stiffness layers;
 - a plunger configured to engage the filler within the housing to thereby operatively deform the tube within the housing when engaging the filler; and
 - an actuator operatively coupled to the plunger and configured to actuate the plunger, wherein:
 - the housing includes first and second clamshell portions, the first clamshell portion is pivotally coupled to the second clamshell portion,
 - the first and second clamshell portions have an open position and a closed position,
 - the first clamshell portion defines a first portion of a cavity and the second clamshell portion defines a second portion of the cavity such that the first and second clamshells form a cavity when in the closed position,
 - the at least two differing hardness layers of the filler includes four layers, and
 - the four layers includes first, second, third, and fourth layers, and the first and second layers are within the first portion of the cavity and the third and fourth layers are within the second portion of the cavity.
2. The valve according to claim 1, wherein the at least two differing stiffness layers includes a stiffer layer and a softer layer.
3. The valve according to claim 2, wherein the softer layer has a shore 00 hardness from 20 to 25.
4. The valve according to claim 2, wherein the stiffer layer has a shore A hardness of 15.
5. The valve according to claim 1, wherein the actuator is a linear actuator operatively coupled to the plunger to actuate the plunger at least one of into and away from the tube.
6. The valve according to claim 1, wherein the housing includes first and second clamshell portions.

7. The valve according to claim 6, wherein the first clamshell portion is pivotally coupled to the second clamshell portion, wherein the first and second clamshell portions have an open position and a closed position.

8. The valve according to claim 7, further comprising a latch configured to latch the first and second clamshell portions together in the closed position.

9. The valve according to claim 1, wherein the first layer is disposed on an inner surface of the first clamshell portion that defines the first portion of the cavity and the second layer is disposed on the first layer.

10. The valve according to claim 9, wherein the second layer defines a channel to guide the tube.

11. The valve according to claim 9, wherein the fourth layer is disposed on an inner surface of the second clamshell portion that defines the second portion of the cavity and the third layer is disposed on the fourth layer.

12. The valve according to claim 11, wherein the third layer defines a channel to guide the tube.

13. The valve according to claim 11, wherein the second layer is stiffer than the first layer.

14. The valve according to claim 13, wherein the third layer is stiffer than the fourth layer.

15. The valve according to claim 17, further comprising at least one spring operatively coupled to the guide and the plunger to urge the plunger towards the housing.

16. The valve according to claim 1, wherein the actuator is configured for being controlled by a monitoring client.

17. A system, comprising:

- a coupler adapted to couple to a drip chamber;
- a support member operatively coupled to the coupler;
- an image sensor having a field of view and operatively coupled to the support member, wherein the image sensor is positioned to view the drip chamber within the field of view;
- a valve fluidly coupled to the drip chamber to regulate the flow of fluid through the drip chamber, wherein the valve comprises:
 - a housing configured to surround a tube fluidly coupled to the drip chamber;
 - a filler disposed within the housing, the filler having at least two differing stiffness layers;
 - a plunger configured to engage the filler within the housing to thereby operatively deform the tube within the housing when engaging the filler; and
 - an actuator operatively coupled to the plunger and configured to actuate the plunger; and
 - at least one processor operatively coupled to the image sensor and to the actuator to operatively control the valve, wherein:
 - the at least one processor receives image data from the image sensor,
 - the at least one processor estimates at least one parameter of liquid within the drip chamber using the image data,
 - the at least one processor actuates the plunger to achieve a target parameter,
 - the housing includes first and second clamshell portions, the first clamshell portion is pivotally coupled to the second clamshell portion,
 - the first and second clamshell portions have an open position and a closed position,
 - the first clamshell portion defines a first portion of a cavity and the second clamshell portion defines a second